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Nutrition for Dogs with Chronic Kidney Disease

My 10-year-old dog was just diagnosed with chronic kidney disease, and I was told she needs to eat special food. What does this mean for her?

Chronic kidney disease (CKD) is the most common kidney-based disease in dogs. Waste products are normally filtered out of the blood by the kidneys and excreted in the urine, but dogs with CKD will end up with an accumulation of these waste products in the bloodstream as the filtering process breaks down. For more information on this condition please see the handout "Chronic Kidney Disease in Dogs".

Nutrition plays an important role in managing CKD in dogs. There are four core goals for managing CKD in dogs:

1. Control the clinical signs associated with accumulating waste products in the blood.
2. Minimize problems with fluid and mineral balance.
3. Sustain adequate nutrition.
4. Modify/slow the progression of CKD.

Nutrition addresses all of these goals. Commercial diets for dogs with CKD are developed to prioritize these key goals. When compared with normal maintenance adult dog food, a kidney support diet contains less protein, sodium, and phosphorus, and increased omega-3 fatty acids. These diets are formulated to help dogs with CKD avoid

metabolic acidosis and are available from your veterinarian. Examples include Hill's® Prescription Diet® k/d®, Royal Canin® Veterinary Diet Canine Renal Support, Purina® ProPlan® Veterinary Diet NF Kidney Function®, and Rayne Clinical Nutrition™ Adult Health-RSS™.

How do nutritional requirements differ for dogs with CKD?

Water. Diseased kidneys are not as effective at excreting waste products from the body through the urine. One consequence of CKD is a decreased ability of the kidneys to concentrate the urine. In order to continue to rid the body of its toxins despite more dilute urine, the body compensates by stimulating greater thirst. This makes it critical for you to provide your dog with an unlimited supply of fresh water. Canned food can help increase your dog's intake of moisture. To encourage more water intake, change your pet's water several times a day and clean your pet's water bowl daily.

Protein. Decreased dietary protein appears to slow the progression of CKD by decreasing the workload on the kidneys to excrete protein waste products. Less protein also means less need for the excretion of protein itself through the filtration mechanism of the kidney, which helps preserve kidney function. The recommended range of protein on a dry matter basis for dogs with CKD is less than or equal to 14-20%.

Phosphorus. Limiting dietary phosphorus in dogs with CKD appears to help delay the progression of CKD, although the precise mechanism is unknown. The recommended phosphorus range on a dry matter basis for dogs with CKD is 0.2-0.5%. Since phosphorus content is related to protein content, it is impossible to achieve these lower levels of phosphorus without limiting protein content.

Sodium. Dietary sodium levels are mildly restricted to reduce the workload on the kidneys. This in turn helps to maintain a reasonable blood pressure.

Omega-3 fatty acids. Dietary omega-3 fatty acids help reduce the production of inflammatory compounds that create oxidative stress to the tissue of the diseased

kidneys, thus contributing to slowed progression of CKD. This works by reducing pro ı 'leaking' through the kidneys.

How can I make good nutritional choices for my dog with CKD?

A kidney support diet for dogs with CKD will contain the following key components on a dry matter basis:

Protein	14-20%
Phosphorus	0.2 - 0.5%
Sodium	≤ 0.3%
Omega-3 fatty acids	0.4 - 2.5%

Your veterinarian will help you choose an appropriate formulation for your dog. It is critical to maintain adequate calorie density in order to support good body condition, so food portion calculations and regular weigh-ins are important.

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Commercially available kidney support diets tend to be quite palatable because it is so important for these dogs to eat in a way that slows the progression of their CKD. If needed, adding water, tuna juice, or low sodium chicken broth may increase the flavor and acceptance.

As CKD progresses, the protein level of the food may need to be further decreased, and the bioavailability of that protein increased. Your veterinarian is your best resource for determining the best nutritional choice for your dog as CKD progresses.